Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-103 (cancelled)

Claim 104. (Previously presented) An apparatus, comprising:

a capsule having an interior surface defining a volume, and the capsule is configured to receive a material and a fluid in the capsule volume, the capsule both is sealable, and is operable to maintain a seal while the capsule is subject to a predetermined temperature and to a predetermined pressure, and the fluid is operable to become supercritical at least at the predetermined temperature and the predetermined pressure;

a restraint having an interior surface defining a chamber, and the chamber is configured to receive the capsule, and the restraint is responsive to resist a pressure exerted by the capsule against the restraint interior surface and to maintain the chamber at a substantially constant volume; and

an energy source operable to supply thermal energy to the capsule, wherein the fluid is responsive to the thermal energy both to become supercritical at the predetermined temperature and at the substantially constant volume in the chamber, and to increase the pressure in the volume to at least the predetermined pressure.

Claim 105. (Previously presented) The apparatus as defined in claim 104, wherein the restraint is operable to counterbalance pressure in the capsule generated by the fluid in response to thermal energy, and the restraint is immobile relative to the

capsule while counterbalancing the capsule pressure.

Claim 106. (Previously presented) The apparatus as defined in claim 104, further comprising a heating system that includes the energy source and a temperature sensor, wherein the temperature sensor is disposed proximate to the capsule and is operable to sense a temperature of the capsule.

Claims 107. – 111. (Cancelled)

Claim 112. (Currently amended) The apparatus of claim 104, further comprising a clamp in contact with the restraint, wherein the clamp is operable to reduce a pressure load on at least a portion of the restraint, and the pressure load can cause a longitudinal stress or an axial stress or both a longitudinal and an axial stress on the ~~restrain~~ restraint portion.

Claims 113. – 129. (Cancelled)

Claim 130. (Previously presented) The apparatus as defined in claim 104, wherein the restraint is operable to transmit pressure to the capsule such that the transmitted pressure to the capsule is measurable as a pressure response of less than about 0.2.

Claim 131. – 144. (Cancelled)

Claim 145. (Previously presented) The apparatus as defined in claim 104, wherein the fluid is sufficiently responsive to thermal energy to pressurize the capsule to

an internal pressure in a range of greater than about 60 kbar, and the capsule and the restraint are cooperatively configured to maintain the seal at the internal pressure and at the corresponding temperature.

Claim 146. (Currently amended) An apparatus, comprising:

a capsule having an interior surface defining a volume, the capsule ~~being configured to receive~~ having disposed within the volume an amount of metal material and an amount of [[a]] ammonia ~~in the capsule volume~~, the capsule both is sealable to maintain an internal pressure, and is ~~operable to maintain~~ functionally capable of maintaining a seal to the amount of ammonia while the capsule is subject to a predetermined temperature and to a pressure in a range of up to about 80 kBar;

a restraint having an interior surface defining a chamber that is configured to receive the capsule, and the restraint is responsive to resist a pressure exerted by the capsule against the restraint interior surface and to maintain the chamber at about a constant volume, and wherein the restraint is not operable to provide ~~no~~ an active pressure load ~~to~~ radially inward toward the capsule~~, or a pre-load pressure only to the capsule~~; and

an energy source operable to supply thermal energy to the capsule, such that the ammonia responds to the thermal energy at the constant volume in the chamber to increase the pressure in the chamber and to become supercritical ammonia, wherein the supercritical ammonia reacts with the metal material to form a metal nitride composition.